International Journal of Advanced Engineering Research and Science (IJAERS)
Peer-Reviewed Journal
ISSN: 2349-6495(P) | 2456-1908(O)
Vol-9, Issue-1; Jan, 2022
Journal Home Page Available: https://ijaers.com/
Article DOI: https://dx.doi.org/10.22161/ijaers.91.29

Relations between vitality and crime in the urban macroscale

Willian Carlos Siqueira Lima[1], Fernanda Jessie Podolak Verfe[2], Letícia Peret Antunes Hardt[3], Carlos Hardt[4], Marlos Hardt[5], Patrícia Costa Pellizzaro[6]

[1] Postgraduate Program in Urban Management of the Pontifícia Universidade Católica do Paraná (PUCPR) and Architecture and Urbanism Course of the Universidade Católica de Santa Catarina (UCSC)
Email: willian.siqueira@catolicasc.org.br
[2] Architecture and Urbanism Course of the Pontifícia Universidade Católica do Paraná (PUCPR)
Email : fer.verfe@hotmail.com
[3] Postgraduate Program in Urban Management and Architecture and Urbanism Course of the Pontifícia Universidade Católica do Paraná (PUCPR)
Email: l.hardt@pucpr.br
[4] Postgraduate Program in Urban Management and Architecture and Urbanism Course of the Pontifícia Universidade Católica do Paraná (PUCPR)
Email: c.hardt@pucpr.br
[5] Architecture and Urbanism Course of the Pontifícia Universidade Católica do Paraná (PUCPR)
Email: marlos.hardt@pucpr.br
[6] Architecture and Urbanism Course of the Universidade Alto Vale do Rio do Peixe (UNIARP)
Email: patricia.pellizzaro@gmail.com

Received: 13 Nov 2021,

Received in revised form: 19 Jan 2022,

Accepted: 24 Jan 2022,

Available online: 31 Jan 2022

***Keywords*— Spatial syntax, urban morphology, road integration and connectivity, public spaces, Cidade Industrial de Curitiba - Brazil.**

***Abstract*—** *Faced with the problem of non-vitalized environments that are promoters of insecurity in cities, the research aims to contribute to the field of studies on interfaces of conditions of morphology and vitality from their interactions with crimes in public spaces. In this context, its general objective is to analyze the relationship between the results of spatial syntax, obtained with the software DephtmapX, and the occurrence of crimes in these places, adopting, as a macroscale case study locus, the neighborhood Cidade Industrial de Curitiba (CIC), Brazil, which has high rates of violence. To achieve these goals, the work was divided into four main sections: theoretical foundations, related to the structuring themes of research; methodological procedures, referring to techniques and methods employed; analytical results, related to empirical interpretation in two parts (spatialization of crime spots and application of spatial syntax) and critical discussions, pertinent to the joint analysis of scientific findings. Clear interconnection of road integration with the criminal occurrence is diagnosed, with a predominance of thefts, which use precisely areas of greater quantities and densification of users. For the connectivity of pathways, the clipping and conformation of the urbanized tissue of the studied region do not allow the establishment of effective reciprocity between attributes examined. It is concluded, therefore, by the achievement of the stated objective, even if future investigations should address in more detail the connection variable and others provided by the syntactic construction of spaces in this broad scalar approach of the contemporary city.*

I. INTRODUCTION

Starting from the recognized problem that empty areas, with few social interactions between private and public environments, as well as between the users themselves, are more susceptible to the occurrence of crimes, it is possible to infer that vitality in cities, understood as a quality that would lead to the permanence of people in a given place [1], is fundamental in the relations between spatial morphology and urban crime. Thus, vitalized locals are those with high intensity, frequency and richness of appropriation, as well as with interaction of activities abroad and inside buildings [2].

The importance of spatial morphology can still be reinforced in the way of enjoying community environments by its users. In view of the current recurrence of problems related to public insecurity, there is a scarcity of urban vitality and inefficiency of urbanistic forms for more adequate service to citizens.

The ineffectiveness of public policies aimed at better safety indexes based on studies on individual punishment is already proven. Thus, contemporary discussions about the city and violence are no longer limited to the view of crime as a police occurrence or as a misconduct, resulting in its current understanding as a sociological phenomenon, provided with context [3]. Thus, the analysis of socio-spatial relationships provides important contributions to the understanding of the theme.

Among the analytical possibilities of the relationship between crime and space, the focus of environmental criminology stands out, which, since the 1980s, has been studying how the ambient can favor the practice of delicts [4]. To this end, it adopts configurations of both socio-economic contextual and socio-spatial situational analysis, focusing on the conditions of the possible crime scene. It is understood, therefore, that elements of the city's shape interfere in the urban vitality and, consequently, in the criminal occurrence in public spaces.

Several morphological studies start from scalar divisions, since landscape elements are specific to each scale. Thus, they can be identified from the three space instances, starting with the implementation of the buildings, passing through the set of blocks and finally reaching the street system.

An important theory of urbanistic analysis consists of spatial syntax [5]. The interpretation of the city from the three scales also develops the concept of ‘natural paths’, indicative of the tendency of urban flows to following the simpler scripts, with smaller changes of direction [6].

By relating accessibility to the city with the street system, from displacements of people in the urbanized network, this last conceptual approach constitutes an important basis for this work. Thus, spatial syntax was adopted as a theory and as a method for analysis in macroscale of the morphological relations of public spaces with the occurrence of crimes.

The selection of the neighborhood Cidade Industrial de Curitiba (CIC) in the state capital of Paraná, Brazil, is justified, among other reasons, because this region is the subject of previous investigations by the same research group. In this context, an evaluation of the ways in which public spaces in this urban sector are appropriated by individuals concludes that specific spatial conditions are not the only responsible for promoting vitality, also indicating the relevance of urban insertion [7]. In addition, the territory's pattern of occupation and the high rates of violence recorded [8] make them an ideal region for the application of spatial syntax.

From the above, this research aims to contribute to the field of studies on interfaces of morphology conditions with the promotion of vitality from their interactions with crimes in public spaces. Therefore, its general objective is to analyze the relationships between the results of spatial syntax and the occurrence of crimes in these places, adopting, as a *locus* of case study in macroscale, the aforementioned CIC district.

In this perspective, preliminary are identified the main theoretical foundations related to spatial syntax, urban vitality and public criminality, followed by the exposure of the methodological procedures employed in the development of the research. From the exposition of the analytical results found, the intended relationships are discussed in the light of the contributions of relevant theories and concepts.

II. THEORETICAL FOUNDATIONS

Since the beginning of the last century, Chicago School theorists have sought to understand urban crime with the support of biographical studies and information mapping, resulting in spatialized analyses of criminal occurrences and socioeconomic contexts [9]. These scientists also coined the concept of ‘social disorganization’, the product of the urbanistic concentration, according to which the weakening of neighborhood relations and attributes of solidarity and companionship, incompatible with the large urbanized centers, potentiate the criminal behavior [10].

In historical terms, violence is constantly associated with the expression of power, with the formation of communities by conflicts. In ancient societies, it was intended to subdue and inhibit the spread of similar actions by other individuals. In the Middle Age, the violent act

was tied to the search for enrichment and power by taking land and other goods as a battle estate. One of the most relevant results of this process, which culminated in the absolutist states, was the confirmation of the power of rulers, who began to centralize the right to punish [11]

Modern man watched the substitution of physical by psychological violence, still perpetrated by the centralizing domain of the State and corroborated by the other social institutions, which assumed the pacification of the subjects with the benefit of the maintaining of the *status quo* [12]. More recently, the concern with the phenomenon has been exacerbated, because society - and especially the Brazilian one - has been in the presence for decades with a remarkable increase in techniques and modes of its production [13].

Its causal analysis points to two coexisting and complementary strands: the structural one, originated by social tensions, and the situational, associated with the specific conjuncture, which can increase the possibility of coaction [14]. While the first demands a broader and multidisciplinary view of the situation, incorporating socioeconomic issues to understand the phenomenon, the second is focused on local environmental aspects that facilitate the likelihood of violent occurrences. Both should be considered in studies on the subject.

There is also some overlap between the various types of urban violence. These, in turn, can be classified into three main categories: politics (e.g.: guerrillas, conflicts paramilitaries or armed between organizations, and 'white collar' crimes), institutional (e.g.: police aggressions, abuses of public servants, mainly in the areas of health and education, and militias), socio-economic (e.g.: intimidation, violent acts in financial disputes, thefts, robberies, kidnappings, drug trafficking, smugglings, property assaults, exploitation of prostitution, gang acting, psychological and sexual abuses, and incivilities).

Several of these typologies are strongly related to the particular scope and other can happen both in the public and in the private spaces. As this research focuses on urban localities of common use, mainly the streets, the types of crime of investigative interest are thefts and robberies, more commonly linked to locals with intense and free attendance, which may, even, possess beneficial or deletery conditions for these offenses.

From the 1960s, emerged a new current derived from environmental criminology called 'Crime Prevention trough Enviromental Design' (CPTED) [15]. Based on postulates of the widespread concept of 'eyes on the street', related to 'natural surveillance' by citizens [16], several researchers present different approaches to the interaction of crime with the environment. In common, they expose questions of visual and/or physical permeability as fundamental in increasing security in public spaces.

The study of the forms of the city necessarily presupposes the disaggregation of the total into its parts, which, evaluated individually, allow the understanding of its effects as a whole [17]. Urban vitality is understood in this conjuncture as a reflection of adequate characteristics of specific morphology and as a fundamental condition for the prevention of the public spaces. .

The urban landscape can be interpreted from three main scales: the street (collective), the neighborhood (community) and the city (social), which can be complemented by the individual or family (residential). In the broader scale ranges, concepts are usually structured by the political division of territory elements or large structures barely noticeable as isolated components when visualized at the observer level.

Assuming the neighborhood as a relatively homogeneous area of territory and the boundaries as large organizers of urban space, for example, there are morphological elements perceptible in the macro view of the city [19]. The Spatial Syntax Theory relates certain characteristics of morphology to movement conditions and identifies possibilities of connection in the urban tissue as structuring items of the evaluation of its quality [5], which is also applicable to other scalars situations.

On the street scale, the ideas of urban vitality are relevant, because the good shape of the city is closely linked to the multiplicity of uses and functions of the private environment and to the ways in which it dialogues with the public space [16]. In addition, the existence of short blocks, basic in the theory of spatial syntax, as well as the high density of people and the frequency of users of different ages are indicators of adequate road form.

Still at street level, there are important attributes, such as widths of the rolling lanes and sidewalks, spatial characteristics of the facades, textures of the paving, amount of vegetation and the visual quality itself. However, while these elements are pertinent to the broader scales of morphology, other optics start from the macro to the micro, aiming at a higher level of detail by identifying properties that fit both the pathway and the lot [17].

It is also important to highlight that it is from the scale of the street that the city is, in fact, perceived [20]. When evaluating how it is understood by its passers-by, there are some important elements in this perceptual process, such as constructive details, walls, floors, colors, textures, urban furniture and vegetation, for example.

Directed to the relationships of the macroscale, that is the path system of a territory, spatial syntax provides two relevant attributes to be evaluated. The first - integration- is the measure that analyzes the distance of a certain stretch of street fruiteaters under analysis. Thus, it is identified of the relative importance of this stretch as a connector element of the road system as a whole [5].

The second - connectivity - refers to the number of pathways that intercept the one of investigative interest [5]. In this context, it is assumed that the greater the number of streets connects the ones under study, higher is its importance.

These two variables- integration and connectivity - are used as a conceptual basis for analyzing the selected territory, as presented below.

III. METHODOLOGICAL PROCEDURES

To achieve the stated objective, the research was divided into four main sections. The first - theoretical foundations - is pertinent to the previous chapter and was focused on the identification of the criteria related to the analysis in the macro-urban scale, mainly linked to spatial syntax. To study issues related to crime, CPTED principles were discussed. The purpose of subsidizing the adopted criteria, the bases of theories and concepts allowed the definition and adjustments of this part of the article, which deals with the techniques and methods employed.

The theories studied were fundamentals to the elaboration of the third section - analytical results, which was subdivided into two parts. In the first - spatialization of crime spots, the sites of criminal occurrences were identified in the study area - CIC neighborhood. So, the information available in its latest version by the electronic site “Onde Fui Roubado’ (‘Where I Was Stolen - 2012-2018) were used. In this collaborative mapping platform, each user can enter information and location of any offense.

The criminal data were cut to the study area and inserted into a geoprocessing platform, using the qGIS *software* for further analysis in conjunction with spatial syntax. Only the occurrences associated with the public space were selected. Thus, only the spots of thefts and robberies were used in the mapping.

Due to the feasibility of investigations, it is worth mentioning the worldwide trend of using collaborative platforms in research in various fields of science. In addition, official data, usually with restricted access, are often questioned, both because of the inconsistency of the methods of completion and the lack of records of certain offenses by the victims themselves.

The second stage of the analytical results - application of spatial syntax in the study area, aimed to obtain information on the roads of the neighborhood, which were converted, in the same previous *software*, into georeferenced axial axes with the largest possible extension. Using the DepthMax X program, the integration and connectivity information of each vial structure was produced, generating the mapping of the variables.

Finally, in the fourth section - integrated analysis of the results, the levels of integration and connectivity of the neighborhood roads and the location of the crime were discussed in an associated way. This content is addressed in the section of this work aimed at critical discussions of the theme.

IV. ANALYTICAL RESULTS

In the mid-twentieth century, the concept of the CIC neighborhood was motivated by the context of Brazil's strong industrialization process, notably due to the Federal Government's guidelines on decentralization of industrial production of traditional poles. The sharp economic growth of the 1960s and 1970s was another motivator for the ambition of the occupation of the broad national territory [21].

The optimism of the period of the project conception and the first years of implementation did not remain in the following decades. The constant crises of the Brazilian and global economy in the 1980s restrained the process of urbanization of CIC, which, together with the challenge of occupying a wide range of land, generated an expressive contingent of uninhabited spaces, resulting in significant fragmentation of the urban tissue, permeated by several areas of irregular occupation [22].

Thus, the large stock of idle land concentrated in CIC has become important attraction to invasion and spontaneous construction, which positions the region, until today, as the main location of informal settlements of the municipality. The spreading of the occupation resulted in a fragmented tissue, connected by some roads of higher hierarchy, which became the references of circulation and concentration of commercial uses [22].

From a socioeconomic point of view, the neighborhood has become the repository of land in the municipality for popular settlements, aimed at classes with lower incomes, providing manpower for the industries of the region [22]. These conditions determine that the CIC is historically one of the most violent neighborhoods in Curitiba.

Carried out by the methodological procedures exposed in the previous section, the mapping of crime spots in the neighborhood is presented in Fig. 1. It is worth

remembering that, for this research, only the crimes of opportunity are of interest, which tend to concentrate in public spaces [23]. Therefore, 75 occurrences were mapped in the evaluated period (2012-2018), identified zx thefts s and 46 as robberies [24].

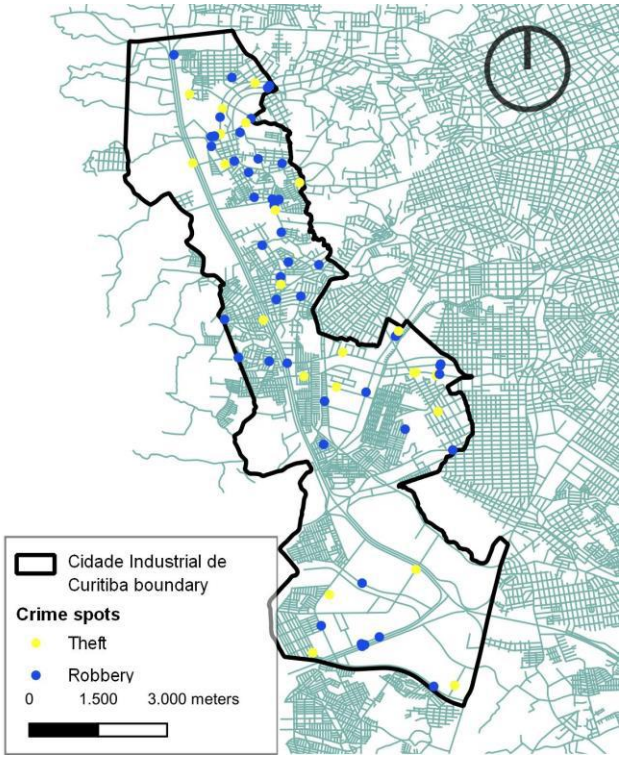

Fig.1: Map of crime spots selected in the study area

Source: Own elaboration based on Onde Fui Roubado (2012-2018).

In a first attempt, the application of spatial syntax was restricted to the CIC boundary. However, it was noted that the road structure at the same time conditions and is conditioned by the surrounding neighborhoods. Thus, the 10 bordering were inserted in the analysis (Table 1).

Table 1: Number of axial axes of pathways per neighborhood in the study area

NEIGHBORHOODS	NUMBER OF AXES
Augusta	243
Campo Comprido	585
Capão Raso	932
CIC	**5.009**
Fazendinha	534
Novo Mundo	1.161
Orleans	309
Pinheirinho	1.314
Riviera	37
São Miguel	216
Tatuquara	1.726
TOTAL	**12.066**

Source: Own elaboration based on IPPUC (2020) [25].

After the axial lines of the entire CIC road network and adjacent neighborhoods are drawn, the most important local are highlighted from the two main variables of the spatial analysis [6]: integration (distance from a given axis to all other) and connectivity (number of roads that cross a certain street) were then mapped. These characteristics contain basic indicators of urban vitality, as they relate to the potential for promoting connections.

The results obtained for the first variable were classified into three levels with equal intervals. When analyzed in conjunction with the criminal occurrence, it is perceived the distribution of crime spots between the intermediate and high levels of integration (Table 2 and Fig. 2).

Table 2: Levels of road integration and respective amount of crimes selected in the study area

LEVELS OF INTEGRATION	THEFTS	ROBBERIES	TOTAL
High	17	15	**32**
Medium	12	31	**43**
Low	0	0	**0**
TOTAL	**29**	**46**	**75**

Source: Own elaboration based on Onde Fui Roubado (2012-2018) [24] *and IPPUC (2020)* [25].

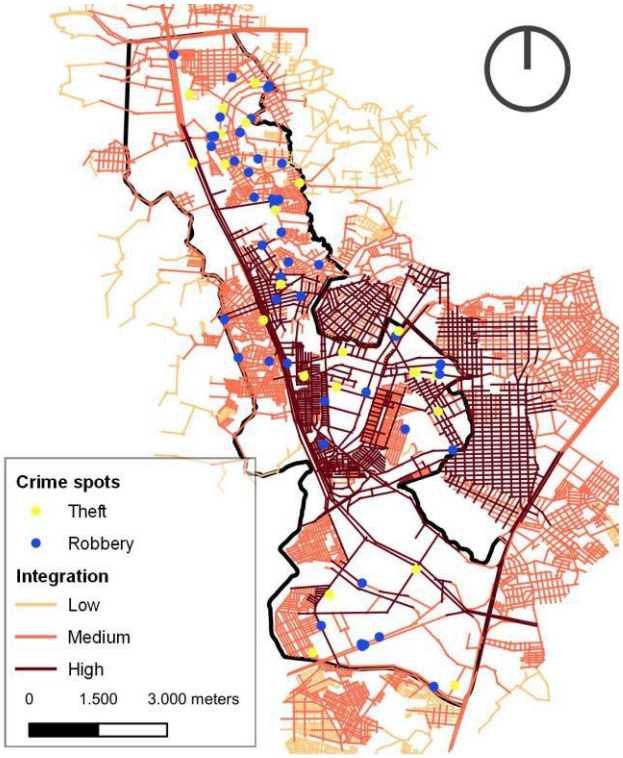

Fig.2: Map of crime spots and levels of road integration in the study area

Source: Own elaboration based on Onde Fui Roubado (2012-2018) [24] *and IPPUC (2020)* [25].

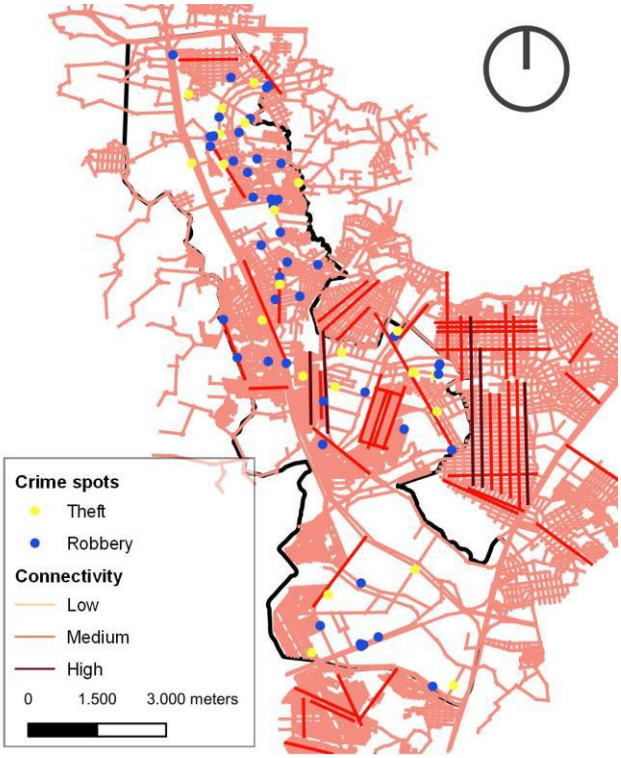

Fig.3: Map of crime spots and levels of road connectivity in the study area

Source: Own elaboration based on Onde Fui Roubado (2012-2018) [24] *and IPPUC (2020)* [25].

For the connectivity analysis, the variable was also classified into three equal intervals. With results significantly different from those obtained for integration, it is perceived the predominance of criminal occurrences in routes classified at the lower level (Table 3 and Fig. 3).

Table 3: Levels of road connectivity *and the number of crimes selected in the study area*

LEVELS OF INTEGRATION	THEFTS	ROBBERIES	TOTAL
High	0	0	**0**
Medium	6	10	**16**
Low	23	36	**59**
TOTAL	**29**	**46**	**75**

Source: Own elaboration based on Onde Fui Roubado (2012-2018) [24] *and IPPUC (2020)* [25].

The results achieved have particularities that deserve special reflections.

V. CRITICAL DISCUSSIONS

It is worth mentioning the predominance of thefts in roads with higher integration and, consequently, with greater potential for vitality, than in those classified in the middle level, in which the prevalence of robberies occurs. The dynamics difference of the two criminal types can explain these results.

According to Brazilian legislation, thefts are understood as subtraction without aggression of some item and often without the perception of the victim and without direct contact between this one and the criminal. In turn , robberies demand violence [26].

Thus, theft tends to be a faster action, ideally occurring in areas with a higher concentration of people, thus with a higher number of potential victims. The criminal use the possibility of his mimetization in the crowd to perpetrate the act. Therefore, it is understandable that in streets with greater integration, therefore with agglomeration of people, this type of crime is more significant.

In the case of robbery, on the other hand, there is interaction of the criminal with the victim. By

intimidation, the aggressor forces the attacked to do something he wants. It is an action that requires more time and exposure of the offender. In a busy place, with a large number of people, there are, tending, less opportunities for the realization of crimes by the 'natural surveillance' of citizens [16]. This fact explains the prevalence of this typology of crime in intermediate classes of road integration, corresponding to more than twice that recorded for the upper stratum.

It is noteworthy that the lower class has no spot of theft or robbery, possibly depending on these streets do not offer opportunities for these crimes, since the flow of people are very low. These are local roads, access to lots and on the periphery of the clipping of the study area, frequented almost exclusively only by residents.

The connectivity variable reveals significantly lower results within the CIC neighborhood compared to adjacent ones. Your historical settlement pattern may explain this result.

Although it is a planned neighborhood, its large extension and the slow process of occupation, often spontaneous, condition that its road network does not have strong regularity. In addition, the northern part of the CIC also has irregular and rugged topographic condition, which makes it difficult to plan orthogonal streets.

In fact, the best results of road connectivity are found outside the boundaries of the study area, in the eastern part, specifically in the neighborhoods Capão Raso and Pinheirinho. Internally to CIC, the only two routes classified at the upper level are the Judge Cid Campelo and Arthur Martins Franco streets (Fig. 4), with 35 and 33 perpendicular connections, respectively. The significant majority of the other ones have less than 10.

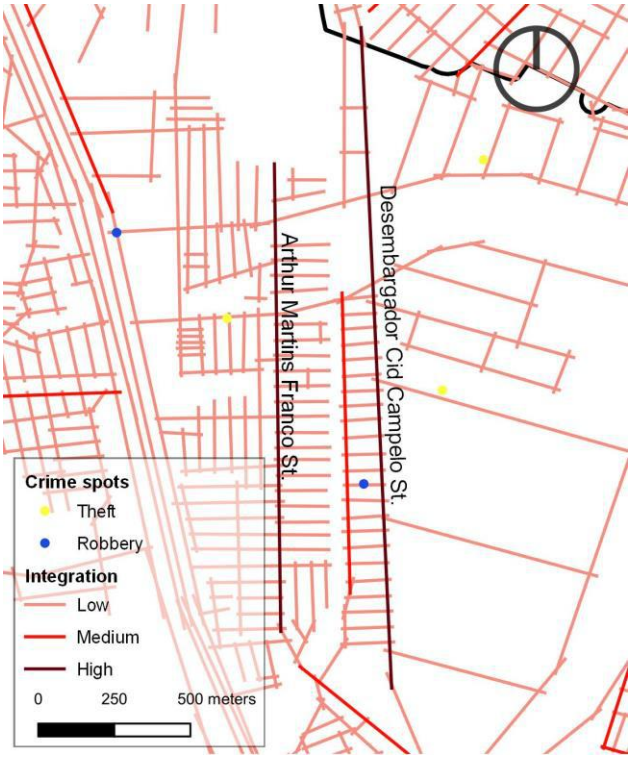

Fig.4: Map of crime points in the vicinity of roads of higher levels of road connectivity in the study area

Source: Own elaboration based on Onde Fui Roubado (2012-2018) [24] *and IPPUC (2020)* [25].

However, the specific results for these pathways must be relativized in the face of their contexts of urban insertion. Although they receive many connections from other streets, these are largely made up of short stretches with no exit or no continuity. Therefore, the connection is not relevant to the urbanized tissue, since it is established by very narrow road axes, residential character and local services. In any case, the two road structures in this case do not present crime spiots specifically in their extension. The nearest robbery point is one block from Cid Campelo Street.

Finally, it is diagnosed that spatial syntax analysis presents more relationship with crime with integration than with connectivity. The results achieved for the first demonstrate that, in course, routes with lower value for this variable are more susceptible to criminal occurrence. However, it is emphasized that the differentiation for thefts, which happens in ways of greater integration, and robberies, which are recorded in those with lower values assigned to this indicator.

In the case of connectivity, the CIC's occupation pattern makes it difficult to analyze this variable in more detail, since the vast majority of its streets have few intersections with other routes. It is also not possible to

identify more expressive relationships of this variable with crime due to the absence of perceptible patterns in the results achieved.

VI. CONCLUSION

The theoretical foundations discussed allow the understanding of the studied phenomena and, in view of the achievement of the objective of the work, it can be affirmed the adequacy of the methodological procedures adopted.

Faced with the difficulties of obtaining and the credibility of official data on crime, mainly regarding thefts and robberies in public spaces, the use of collaborative platform is timely and efficient. Questions about the reliability of this information can be reduced by applying filters to the spots raised, eliminating those with inconsistency in filling out their attributes.

The analytical results of road integration are clear, with the values obtained for this variable enabling the evaluation in conjunction with crime, including allowing different interpretations for the two criminal modalities. These findings form contributions both to the knowledge of the specific reality of the area of study and to the generic deepening of the thematic context.

For the connectivity variable, however, it is not possible to interpret the range of sufficient results to identify effective relations with crime. Thus, it is recommended that future research be prioritized for studies of alternatives for measuring this particular attribute, including with expansion or reduction of study clippings to assess possible relationships of road connections with criminality.

Spatial syntax proved to be an interesting analytical tool for crime in urban public space. Even though, in this work, only two variables have been used, it is emphasized that the technique provides other topological measures applied to criminal studies, which can be the object of future investigations on the theme.

ACKNOWLEDGEMENTS

To the Pontifícia Universidade Católica do Paraná (PUCPR), for supporting researchers, and to the Fundação Araucária de Apoio ao Desenvolvimento Científico e Tecnológico do Estado do Paraná (FAADCT-PR), for financial support for research on Safe Landscape.

REFERENCES

[1] Siava Jalaladdini, Derya Oktay. Urban public spaces and vitality: a socio-spatial analysis in the streets of Cypriot towns. *Procedia - Social and Behavioral Sciences*, (35):664-674. https://doi.org/10.1016/j.sbspro.2012.02.135.

[2] Renato T. of Saboya. (2016). Morphological factors of urban vitality - part 1: density of uses and people. *ArchDaily* [online], (Nov.2016):s.p. Retrieved from https://www.archdaily.com.br/br/798436/fatores-morfologicos-da-vitalidade-urbana-nil-parte-1-densidade-de-usos-e-pessoas-renato-t-de-saboya

[3] Sergio Tonkonoff. (2014). Crime as social excess: Reconstructing Gabriel Tarde's criminal sociology. *History of the Human Sciences*,27(2):60-74. https://doi.org/10.1177/0952695114525167

[4] Kim Sangmoon, Randy L. LaGrange, Cecil L. Willis. Place and crime: Integrating sociology of place and environmental criminology. *Urban Affairs Review*, 49(1):141-155. https://doi.org/10.1177/1078087412465401

[5] Bill Hillier, Julienne Hanson. (2009[1984]). *The social logic of space*. Reimp.ed. Cambridge, UK: Cambridge University Press, 2009[1984].

[6] Karolina Jacoby. What is space syntax? Does the urban form of the city affect the level of burglary and crime? In: *Séminaire de Master Architectures et Villes face à la Mondialisation*. Stockholm, SE: Royal Institute of Architecture, w.p.

[7] Willian C. S. Lima. (2020). *Safe* Landscape: relationships between morphology and urban vitality. Doctoral thesis, Postgraduate Program in Urban Management, Pontifical Catholic University of Paraná. Retrieved from https://www.biblioteca.pucpr.br/pergamum/biblioteca/index.php?codAcervo=352455

[8] SESP-PR - Secretary of State for Public Security of Paraná. (2020). *Statistical report 2020*. Curitiba, PR, BR: institutional edition.

[9] WimHardyns, Lieven J.R. Pauwels. (2017) The Chicago School and criminology. In: Ruth Ann Tripplett. (Ed.). *The* Wiley *handbook of the history and philosophy of criminology.* Hoboken, NJ, US: Wiley-Blackwell, 123-139.

[10] Jeremy R. Porter, Joel Cappellan, Sriram Chintakrindi. (2015). Social Disorganization Theory. In: Wesley Jennings. (Ed.). *The Encyclopedia of Crime and Punishment*. Hoboken, NJ, US: Wiley-Blackwell, 1179-1186.

[11] Matthew P.Fitzpatrick, Catherine Kevin. (2020). Theorising the history of violence after Pinker. *Rethinking History*, 24(3-4):332-350.https://doi.org/10.1080/13642529.2020.1847897

[12] Martinefournier. (2013). Surveiller et punish. Naissance de la prison. In: Catherine Halpern (Éd.). *Pensées rebelles.* Foucault, Derrida, Deleuze. Auxerre, FR: Éditions Sciences Humaines, 47-52.

[13] Octavio Ianni. (2002). Violence in contemporary society. *Sociology Studies* [online], 7(12):7-28. Retrieved from https://periodicos.fclar.unesp.br/estudos/article/view/644

[14] Caroline O. N. Moser. (2004). Urban violence and insecurity: An introductory roadmap. *Environment& Urbanization*,16(2):3-16. https://doi.org/10.1177/095624780401600220

[15] Timothy D. Crowe. (2013[1991]). *Crime prevention through environmental design:* applications of architectural design

and space management concepts. 3.ed. rev. Walthan,MA,US; Oxford, UK:Elsevier.

[16] Jane Jacobs. (2011[1961]). *The death and life of great* American *cities.* 50thed. New York, NY, US: Modern Library.

[17] Jose M. R. G. Lamas. (2014[1993]). Urban morphology and city design. 7.ed. Lisbon, PT: Calouste Gulbenkian Foundation.

[18] Aldo Rossi. (2011[1966]). *L'architettura della città*. Padova, IT: Toni Marsilio.

[19] Gabriele Filomena, Judith A. Verstegen, Ed Manley. A computational approach to 'The Image of the City'. Cities, (89):14-25. https://doi.org/10.1016/j.cities.2019.01.006

[20] Gordon Cullen. (2015[1961]). *The concise townscape.* Abingdon, UK: Architectural Press; Routledge.

[21] Pedro Cezar Dutra Fonseca, Ivan C. Solomon, solomon. (2017). Brazilian industrialization: notes on the historiographical debate. *Time*, 23(1): 86-104. https://doi.org/10.1590/tem-1980-542x2017v230105

[22] Iran Taborda Dudeque. (2010). *No day without a line:* a history of urbanism in Curitiba. São Paulo, SP, BR: NobelStudio.

[23] Cláudio Chaves Beato Filho, Bethany Totino Peixoto, Mônica Viegas Andrade. (2004). Crime, opportunity and victimization. *Brazilian Journal of Social Sciences*, 19(55):73-89. https://doi.org/10.1590/S0102-69092004000200005

[24] Onde fui Roubado. (2012-2018). *Data on crimes in* Curitiba, Paraná. Retrieved from http://ondefuiroubado.com.br

[25] IPPUC - Institute of Research and Urban Planning of Curitiba. (2020). *Information*. Retrieved from https://ippuc.org.br/

[26] Brazil. (1940). Federal Decree-Law No. 2,848, of September 7, 1940. It establishes the Penal Code. *Official Gazette [of] Federative Republic of Brazil*, Executive Power, Rio de Janeiro, RJ, BR, 08 Sep. 1940.